

Connected Electric Vehicles in Smart Cities

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Abstract:

Smart Grids and Intelligent Transportation Systems would be the main infrastructures within Smart Cities. At the same time, Plug-In Electric Vehicles (PEVs) are expected to be widely adopted as passenger cars and as commercial vehicle fleets in these smart cities since they have low carbon emissions and low operating costs. However PEVs pose a number of challenges to the smart grid due to their heavy charging load while vehicle batteries emerge as promising Distributed Energy Resources that can be used for the benefit of the smart grid. Challenges and opportunities emerging from electric vehicle integration to the smart grid brought forward numerous recent works that address architectures, models and networks to enable communications and control for electric vehicles. Electric vehicle and smart grid interaction is a newly flourishing research field receiving significant attention from communications, power and automotive societies. In this talk we will present a comprehensive background on the subject matter, present state-of-the-art architectures, models and networks in the domain and provide a thorough list of open issues which is invaluable for the researchers who are planning to steer their research direction to this area as well as expert researchers who are already actively working on this topic and seeking new directions.